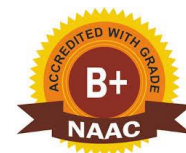




AAER's

Asian College of Science and Commerce

Affiliated to SPPU and Approved by Govt of Maharashtra Accredited by NAAC with B+ Grade



Course Outcomes

The examination format consists of continuous assessment, which accounts for 15 marks for internal evaluation and 35 marks for external evaluation.

Class: F.Y. B.Sc. (Semester-I)

Sr. No.	Course Name	Course Outcomes
1.	Basics of Applied Electronics	To understand importance of Electronics in day today life
		To understand basics of electronic circuits
		To make the students learn through problem solving and to understand few electronic systems
2.	Electronic Devices and Circuits	To know about basics of Semiconductor Devices and its parameters
		To know about the details of diode, transistors, FET and MOSFETS
		To build and understand application circuits of electronic devices. And To encourage the students for making use of simulation software for testing the circuits before experimentation.
3.	ELECTRONICS LAB IA	To familiarize the student with different components and devices used in the laboratory and the device manuals
		To familiarize students with laboratory instruments like Ammeter, voltmeter, DMM, Signal Generator, Function Generator, CRO and tools like cutter, stripper etc.
		To train them to design and analyze the circuits for specific purpose
4.	Physics Principles and Applications	To understand the general structure of atom, spectrum of hydrogen atom. and To understand the atomic excitation and LASER principles.
		To understand the bonding mechanism and its different types.
		To demonstrate an understanding of electromagnetic waves and its spectrum
5.	Mechanics and Properties of Matter	To demonstrate an understanding of electromagnetic waves and its spectrum.
		Understand the types and sources of electromagnetic waves and applications.
		To demonstrate quantitative problem solving skills in all the topics covered.
6.	Physical and Analytical Chemistry	Explain / discuss the term energy of activation with the help of energy diagram.
		Explanation for temperature coefficient and effect of temperature on rate constant k
		Explanation of adsorption results in the light of Langmuir adsorption isotherm, Freundlich's adsorption Isotherm and BET theory.
		Explain / discuss different terms related to errors in quantitative analysis
7.	Inorganic and Organic Chemistry	Explain formation and stability of molecule on the basis of bond order.
		Apply MOT to explain bonding in diatomic molecules other than explained in syllabus



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Class: F.Y. B.Sc. (Semester-II)

Sr. No.	Course Name	Course Outcomes
1.	Fundamentals of Digital Electronics	To know about different number systems and codes and To understand logic gates and truth tables
		To understand combinational logical circuits and To understand sequential logical circuits
		To encourage the students for making use of simulation software for testing and building the circuits before experimentation.
2	Analog and Digital Device applications	To know basics of operational amplifier 2. To compare performance parameters of opamp ICs available in market
		To understand basic application circuits of opamp.
		To basics of timer IC 555 and its applications and To understand data converters and their performance parameters
3	ELECTRONICS LAB IB	To build application circuits of IC555 and To understand types of ADC and DAC and its performance parameters like accuracy, resolution etc
		To teach the students how to analyze the results and calculate performance parameters
		To understand features of laboratory instruments like Ammeter, voltmeter, DMM, Signal Generator, Function Generator, CRO
4	Heat and Thermodynamics	To understand the concept of the electric force, electric field and electric potential for stationary charges.
		Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law.
		To understand the dielectric phenomenon and effect of electric field on dielectric.
5	Electricity and Magnetism	To Study magnetic field for steady currents using Biot-Savart and Ampere's Circuital laws.
		To study magnetic materials and its properties.
		Demonstrate quantitative problem solving skills in all the topics covered.
6	Physical and Analytical Chemistry	Discuss meaning of phase, component and degree of freedom.
		Derive of phase rule.
		Differentiate between ideal and non-ideal solutions and can apply Raoult's law. Interpretation of i) vapour pressure–composition diagram ii) temperature- composition

		<p>diagram</p> <p>Discuss / explain Kohlrausch's law and its Applications, Conductivity Cell, Conductivity Meter, Whetstone Bridge.</p> <p>Explain construction and working of colorimeter. Apply colorimetric methods of analysis to real problem in analytical laboratory.</p>
7	Inorganic and Organic Chemistry	<p>. Correlate no of unpaired electrons and orbitals used for bonding. . Identify / explain / discuss inner and outer orbital complexes.</p> <p>. Explain principle of CFT. Apply crystal field theory to different type of complexes (Td, Oh, Sq. Pl complexes)</p> <p>Write / discuss the mechanism reactions carboxylic acids and their derivatives. Explain /Discuss important reactions of carboxylic acids and their derivatives</p> <p>Explain / discuss synthesis of carboxylic amines. Write / discuss the mechanism reactions carboxylic amines.</p>
8	Practical Chemistry-IV	<p>To study the effect of added electrolyte on the critical solution temperature of phenolwater system and to determine the concentration of the given solution of electrolyte.</p> <p>Synthesis of Tris(ethylenediamine)nickel(II) from Ni(II) salt, ethylenediamine and sodium thiosulfate. Comment on colour and magnetic properties of the complex</p> <p>determine the amount of ethyl benzoate in given solution volumetrically. (Standardization of acid must be performed).</p> <p>Understand systematic methods of identification of substance by chemical methods</p>



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Class: S.Y. B.Sc. (Semester-III)

Sr. No.	Course Name	Course Outcomes
1.	Communication Electronics	Understand different blocks in communication systems, types of noise in communication systems and its different parameters and Understand need of modulation, modulation process and amplitude modulation and demodulation methods
		Analyse generation of FM Modulation and demodulation methods and comparison between amplitude and frequency modulation
		Understand different blocks in communication systems, types of noise in communication systems and its different parameters and Understand need of modulation, modulation process and amplitude modulation and demodulation methods
2	Digital Circuit Design	Distinguish between different logic families based on their performance parameters
		Analyze basic combinational logic circuits for simple applications
		Design combinational logic circuits using K maps for identified applications
3	Practical Course	Describe and explain the techniques of generation of AM/ FM and demodulation
		Design FSK generation using standard IC XR 2206 referring data manuals
		Describe and explain the TDM/ FDM generation technique and Demonstrate PPM/PWM/PAM and PCM techniques using standard circuits in data manuals
4	Mathematical Methods in Physics-I	Understand the complex algebra useful in physics courses. And Understand the concept of partial differentiation
		Understand the role of partial differential equations in physics. and Understand vector algebra useful in mathematics and physics.
		Understand the concept of singular points of differential equations.
5	Electronics-I	Apply different theorems and laws to electrical circuits. And Understand the relations in electricity..
		Understand the parameters, characteristics and working of transistors. And Understand the functions of operational amplifiers
		Design circuits using transistors and applications of operational amplifiers.
6	Physical and Analytical Chemistry	Define / Explain concept of kinetics, terms used, rate laws, molecularity, order.
		Explain factors affecting rate of reaction
		Explain / discuss the term energy of activation with the help of energy diagram
		Explanation for temperature coefficient and effect of temperature on rate constant
7	Inorganic and Organic Chemistry	Define terms related to molecular orbital theory (AO, MO, sigma bond, pi bond, bond order, magnetic property of molecules, etc).. Explain and apply LCAO principle for the formation of MO's from AO's

		Define different terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect, etc.)
		Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned
		Identify and draw the structures alkyl / aryl halides from their names or from structure name can be assigned. Explain / discuss synthesis of alkyl / aryl halides.
8	Practical Chemistry-III	Verify theoretical principles experimentally.
		Interpret the experimental data on the basis of theoretical principles.
		Correlate theory to experiments. Understand/verify theoretical principles by experiment observations; explain practical output / data with the help of theory.
		Understand systematic methods of identification of substance by chemical methods.

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**Course Outcomes**

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Class: S.Y. B.Sc. (Semester-IV)

Sr. No.	Course Name	Course Outcomes
1.	Analog Circuit Design	Design single/multistage amplifier using transistor and analyze their frequency response base on gain-bandwidth product due to coupling /bypass capacitors
		Classify and compare different power amplifiers and Understand and design push pull amplifier and need of heat sinks
		Distinguish between Opamp Feedback circuits based on their configurations
2	Microcontroller and Python Programming	Write code/program using open source programming language(arduino) for basic identified applications
		Understand programming basics of python programming language
		Understand special features of python programming language such as importing modules, directory, tupules and Design , build and implement applications using arduino and python
3	Practical Course	Describe and explain the design procedure of different types of active filters and analyze its frequency response
		Demonstrate positive feedback for oscillator circuits using standard ICs and Describe and explain design procedure for two stage amplifiers and application circuits
		Design practical circuits for identified applications and Develop working setup and write programs using programming techniques of arduino
4	Oscillations, Waves and Sound	To understand and solve the equations / graphical representations of motion for simple harmonic, damped, forced oscillators and waves. and To explain oscillations in terms of energy exchange with various practical applications.
		To solve numerical problems related to undamped, damped, forced oscillations and superposition of oscillations.
		To study characteristics of sound, decibel scales and applications.
5	Optics	Explain why a light beam spread out after passing through an aperture and Summarize the polarization characteristics of electromagnetic wave
		Understand the operation of many modern optical devices that utilize wave optics
		Understand optical phenomenon such polarization, diffraction and interference in terms of the wave mode
6	Physical and Analytical Chemistry	Define the terms in phase equilibria such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc.
		Explain meaning and Types of equilibrium such as true or static, metastable and

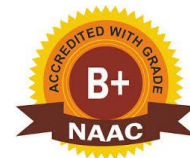
		unstable equilibrium.
		Discuss meaning of phase, component and degree of freedom.
		Derive of phase rule. □ Explain of one component system with respect to: Description of the curve, Phase rule relationship and typical features for i) Water system ii) Carbon dioxide system iii) Sulphur system
7	Inorganic and Organic Chemistry	Isomerism in coordination complexes
		Explain different types of isomerism in coordination complexes
		Apply principles of VBT to explain bonding in coordination compound of different geometries. Correlate no of unpaired electrons and orbitals used for bonding
		Apply crystal field theory to different type of complexes (Td, Oh, Sq. Pl complexes)
8	Practical Chemistry-III	Interpret the experimental data on the basis of theoretical principles.
		Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory.
		Understand systematic methods of identification of substance by chemical methods. Write balanced equation for all the chemical reactions performed in the laboratory.
		Perform organic and inorganic synthesis and able to follow the progress of the chemical reaction.
		Set up the apparatus properly for the designed experiments



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Class: T.Y. B.Sc. (Semester-V)

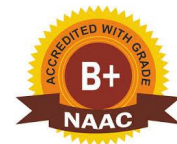
Sr.No.	Course Name	Course Outcomes
1	Digital Design using Verilog	Know and understand structure of HDL and Verilog.
		Understand different modeling styles in Verilog.
		Use Verilog effectively for simulation, verification and synthesis of digital system.
2	Microcontroller Architecture and Programming	Understand the basics of microcontroller.
		Acquire basic programming skills in C language.
		Understand and acquire basic programming skills for AVR microcontroller.
3	Analog circuit Design and Applications	Understand basics of analog circuit design.
		Analyze waveform generators required for testing different circuits.
		Build application circuits using specialized ICs.
		Design analog systems using available ICs.
4	Nanoelectronics	Understand basic concepts of nano electronic devices and nano technology.
		Understand the electron transport mechanism in nanostructures.
		Understand techniques of characterization of nanostructures.
		Understand different devices constructed using nanotechnology.
5	Signals and Systems	Know basics of electronic signals.
		Know different types of systems.
		Analyze systems using Laplace and Fourier analysis.
		Understand digital signal processing system.
6	A. Optics and Fiber Optic Communication	To acquire Knowledge of optical fiber communication system.
		To understand different parameters of optical fibers.
		To learn essential optical components of Fiber Optic Communication.
		To analyze and integrate fiber optical network components in variety of networking schemes.
7	Practical Course I	Analyze different design and test procedures for analog circuits and systems.
		Measure different parameters of optical fiber communication systems
		Understand importance of product design and entrepreneurship. Develop electronic systems for given application.
8	Practical Course II	Develop and simulate design digital systems using Verilog.

		Design and develop AVR microcontroller based systems.
		Understand different Nano electronic devices. Inculcate basic skills required for design and development of embedded Systems.
9	Practical Course III(Project)	Understand basic methodology of selection of topic for project.
		Understand how to do literature review for selected topic for project.
		Apply the knowledge for design and development of the selected project.
		Use different software and hardware for testing, validation and verification of circuits for successful outcome of project
		Understand documentation process in the form of presentation and project report
		Understand process of systematic development of electronic system and Development of skills for successful outcome

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Course Outcomes

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Class: T.Y.B.Sc. (Semester-VI)

Sr.No.	Course Name	Course Outcomes
1	Modern Communication Systems	Understand the digital modulation techniques. and Understand different types of pulse modulation techniques.
		Describe the evolution and importance of Mobile communication and cellular communication
		Know the basics of satellite communication systems.
2	Embedded System Design using Microcontrollers	Understand features and architecture of PIC microcontroller. And Demonstrate how to interface PIC microcontroller with different peripherals
		Understand features and architecture of ARM microcontroller.
		Demonstrate embedded system using given microcontroller.
3	Industrial Electronics	Understand basics of semiconductor power devices.
		Analyze basic power electronics circuits and demonstrate applications.
		Understand basics of motor control.
		Understand basics of Electric Vehicle systems
4	Manufacturing Processes for Electronics	Understand basics of Passive Electronic Component Manufacturing Processes
		Understand process involved in PCB manufacture and Modern Circuit Assembly
		Know about the Semiconductor Device and IC Fabrication Process
5	Process Control Systems	Familiar with different types of sensors and related systems
		Know different types of measurement systems.
		Understand control parameters in process automation.
		Understand different types of process control systems and their characteristics.
6	(B): Sensors and Systems	Understand basic principles and types of different sensors.
		Understand basic principles and types of actuators.
		Know about signal conditioning systems for sensors.
7	Practical Course I	Analyze different design and test procedures for analog circuits and systems.
		Measure different parameters of optical fiber communication systems
		Understand importance of product design and entrepreneurship.
		Develop electronic systems for given application.
8	Practical Course II	Develop and simulate design digital systems using Verilog.
		Design and develop AVR microcontroller based systems.
		Understand different Nano electronic devices. Inculcate basic skills required for design and development of embedded Systems.
9	Practical Course III(Project)	Understand basic methodology of selection of topic for project.
		Understand how to do literature review for selected topic for project.
		Apply the knowledge for design and development of the selected project.
		Use different software and hardware for testing, validation and

		verification of circuits for successful outcome of project
		Understand documentation process in the form of presentation and project report
		Understand process of systematic development of electronic system and Development of skills for successful outcome